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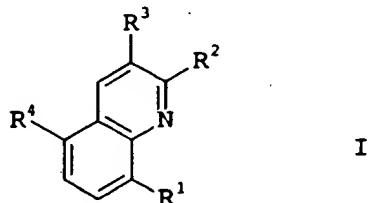
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CLAIMS AS FILED IN PRELIMINARY AMENDMENT 0Z 49365

1. A cyclohexenonequinolinoyl derivative of the formula I

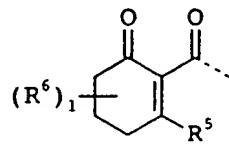


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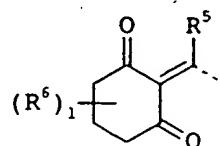
R¹ is hydrogen, nitro, halogen, cyano, C₁-C₆-alkyl, C₁-C₆-haloalkyl, C₁-C₆-alkoxyiminomethyl, C₁-C₆-alkoxy, C₁-C₆-haloalkoxy, C₁-C₆-alkylthio, C₁-C₆-haloalkylthio, C₁-C₆-alkylsulfinyl, C₁-C₆-haloalkylsulfinyl, C₁-C₆-alkylsulfonyl, C₁-C₆-haloalkylsulfonyl, aminosulfonyl, N-(C₁-C₆-alkyl)aminosulfonyl, N, N-di-(C₁-C₆-alkyl)aminosulfonyl, N-(C₁-C₆-alkylsulfonyl)amino, N-(C₁-C₆-haloalkylsulfonyl)amino, N-(C₁-C₆-alkyl)-N-(C₁-C₆-alkylsulfonyl)amino, N-(C₁-C₆-alkyl)-N-(C₁-C₆-haloalkylsulfonyl)amino, phenoxy, heterocyclyoxy, phenylthio or heterocyclthio, where the four last-mentioned radicals may be partially or fully halogenated and/or may carry one to three of the following substituents : nitro, cyano, C₁-C₄-alkyl, C₁-C₄-haloalkyl, C₁-C₄-alkoxy or C₁-C₄-haloalkoxy;

R², R³ are hydrogen, C₁-C₆-alkyl, C₁-C₆-haloalkyl or halogen;

R⁴ is a compound IIa or IIb



IIa



IIb

where

R^5 is halogen, OR^7 , SR^7 , SOR^8 , SO_2R^8 , OSO_2R^8 , POR^8R^9 , OPR^8R^9 , $OPOR^8R^9$, $OPSR^8R^9$, $NR^{10}R^{11}$, $ONR^{11}R^{12}$, N-linked heterocyclyl or O-(N-linked heterocyclyl), where the heterocyclyl radical of the two last-mentioned substituents may be partially or fully halogenated and/or may carry one to three of the following radicals:
nitro, cyano, C_1 - C_4 -alkyl, C_1 - C_4 -haloalkyl, C_1 - C_4 -alkoxy or C_1 - C_4 -haloalkoxy;

R^6 is nitrol, halogen, cyano, C_1 - C_6 -alkyl,
 C_1 - C_6 -haloalkyl, di-(C_1 - C_6 -alkoxy)methyl,
di-(C_1 - C_6 -alkylthio)methyl,
(C_1 - C_6 -alkoxy)(C_1 - C_6 -alkylthio)methyl, hydroxyl,
 C_1 - C_6 -alkoxy, C_1 - C_6 -haloalkoxy,
 C_1 - C_6 -alkoxycarbonyloxy, C_1 - C_6 -alkylthio,
 C_1 - C_6 -haloalkylthio, C_1 - C_6 -alkylsulfinyl,
 C_1 - C_6 -haloalkylsulfinyl, C_1 - C_6 -alkylsulfonyl,
 C_1 - C_6 -haloalkylsulfonyl, C_1 - C_6 -alkylcarbonyl,
 C_1 - C_6 -haloalkylcarbonyl, C_1 - C_6 -alkoxycarbonyl or
 C_1 - C_6 -haloalkoxycarbonyl;

or

two radicals R^6 , which are linked to the same carbon,

together form an $-O-(CH_2)_m-O-$, $-O-(CH_2)_m-S-$, $-S-(CH_2)_m-S-$, $-O-(CH_2)_n-$ or $-S-(CH_2)_n$ chain which may be substituted by one to three radicals from the following group:

halogen, cyano, C_1 - C_4 -alkyl, C_1 - C_4 -haloalkyl or C_1 - C_4 -alkoxycarbonyl;

or

two radicals R^6 , which are linked to the same carbon,

together form a $-(CH_2)_p$ chain which may be interrupted by oxygen or sulfur and/or may be substituted by one to four radicals from the following group:

halogen, cyano, C_1 - C_4 -alkyl, C_1 - C_4 -haloalkyl or C_1 - C_4 -alkoxycarbonyl;

or

two radicals R^6 , which are linked to the same carbon,

together form a methylidene group which may be substituted by one or two radicals

from the following group:

halogen, hydroxyl, formyl, cyano, C_1 - C_6 -alkyl, C_1 - C_6 -haloalkyl, C_1 - C_6 -alkoxy, C_1 - C_6 -haloalkoxy, C_1 - C_6 -alkylthio, C_1 - C_6 -haloalkylthio, C_1 - C_6 -alkylsulfinyl, C_1 - C_6 -haloalkylsulfinyl, C_1 - C_6 -alkylsulfonyl or C_1 - C_6 -haloalkylsulfonyl;

or

two radicals R^6 , which are linked to the same carbon,
together with this carbon form a carbonyl group;

or

two radicals R^6 , which are linked to different carbons,
together form a $-(CH_2)_n$ chain which may be substituted by one to three radicals from
the following group:
halogen, C_1 - C_6 -alkyl, C_1 - C_6 -alkoxy, hydroxyl or C_1 - C_6 -alkoxycarbonyl;

R^7 is C_1 - C_6 -alkyl, C_3 - C_6 -alkenyl, C_3 - C_6 -haloalkenyl,
 C_3 - C_6 -alkynyl, C_3 - C_6 -haloalkynyl, C_3 - C_6 -cyloalkyl,
 C_1 - C_{20} -alkylcarbonyl, C_2 - C_6 -alkenylcarbonyl,
 C_2 - C_6 -alkynylcarbonyl, C_3 - C_6 -cyloalkylcarbonyl,
 C_1 - C_6 -alkoxycarbonyl, C_3 - C_6 -alkenyloxycarbonyl,
 C_3 - C_6 -alkynyloxycarbonyl,
 $(C_1$ - C_{20} -alkylthio)carbonyl,
 C_1 - C_6 -alkylaminocarbonyl,
 C_3 - C_6 -alkenylaminocarbonyl,
 C_3 - C_6 -alkynylaminocarbonyl,
N,N-di-(C_1 - C_6 -alkyl)aminocarbonyl,
N-(C_3 - C_6 -alkenyl)-N-(C_1 - C_6 -alkyl) aminocarbonyl ,
N-(C_3 - C_6 alkynyl)-N-(C_1 - C_6 -alkyl) aminocarbonyl ,
N-(C_1 - C_6 -alkoxy)-
N-(C_1 - C_6 -alkyl) aminocarbonyl , N-(C_3 - C_6 -alkenyl)-
N-(C_1 - C_6 -alkoxy) aminocarbonyl , N-(C_3 - C_6 -alkynyl)-
N-(C_1 - C_6 -alkoxy) aminocarbonyl, di-(C_1 - C_6 -alkyl)-

aminothiocarbonyl, C_1 - C_6 -alkylcarbonyl- C_1 - C_6 -alkyl,

C_1 - C_6 -alkoxyimino- C_1 - C_6 -alkyl,

N -(C_1 - C_6 -alkylamino) imino- C_1 - C_6 -alkyl or

N,N -di-(C_1 - C_6 -alkylamino)imino- C_1 - C_6 -alkyl, where

the above-mentioned alkyl, cycloalkyl and alkoxy radicals may be partially or fully halogenated and/or may carry one to three of the following groups:

cyano, C_1 - C_4 -alkoxy, C_1 - C_4 -alkylthio, di-(C_1 - C_4 -alkyl)amino, C_1 - C_4 -alkylcarbonyl,

C_1 - C_4 -alkoxycarbonyl, C_1 - C_4 -alkoxy- C_1 - C_4 -alkoxycarbonyl, di-(C_1 - C_4 -alkyl)amino- C_1 -

C_4 -alkoxycarbonyl, hydroxycarbonyl, C_1 - C_4 -alkylaminocarbonyl, di-(C_1 - C_4 -

alkyl)aminocarbonyl, aminocarbonyl, C_1 - C_4 -alkylcarbonyloxy or C_3 - C_6 -cycloalkyl;

phenyl, heterocycl, phenyl- C_1 - C_6 -alkyl, heterocycl- C_1 - C_6 -alkyl, phenylcarbonyl- C_1 -

C_6 -alkyl, heterocyclcarbonyl- C_1 - C_6 -alkyl, phenylcarbonyl, heterocyclcarbonyl,

phenoxy carbonyl, heterocyclloxy carbonyl, phenoxythiocarbonyl,

heterocyclloxythiocarbonyl, phenoxy- C_1 - C_6 -alkylcarbonyl, heterocyclloxy- C_1 - C_6 -

alkylcarbonyl, phenylarminocarbonyl, N -(C_1 - C_6 -alkyl)- N -(phenyl)arminocarbonyl,

heterocyclarminocarbonyl, N -(C_1 - C_6 -alkyl)- N -(heterocycl)arminocarbonyl, phenyl-

C_2 - C_6 -alkenylcarbonyl or heterocycl- C_2 - C_6 -alkenylcarbonyl, where the phenyl and

the heterocycl radical of the 20 last-mentioned substituents may be partially or fully

halogenated and/or may carry one to three of the following radicals:

nitro, cyano, C_1 - C_4 -alkyl, C_1 - C_4 -halogenalkyl, C_1 - C_4 -alkoxy or C_1 - C_4 -haloalkoxy;

R^8, R^9 are C_1 - C_6 -alkyl, C_3 - C_6 -alkenyl, C_3 - C_6 -haloalkenyl, C_3 - C_6 -alkynyl, C_3 - C_6 -haloalkynyl,

C_3 - C_6 -cycloalkyl, hydroxyl, C_1 - C_6 -alkoxy, amino, C_1 - C_6 -alkylamino, C_1 - C_6 -

haloalkylamino, di-(C_1 - C_6 -alkyl)amino or di-(C_1 - C_6 -haloalkyl)amino, where the

abovementioned alkyl, cycloalkyl and alkoxy radicals may be partially or fully

halogenated and/or may carry one to three of the following groups:

cyano, C_1 - C_4 -alkoxy, C_1 - C_4 -alkylthio, di-(C_1 - C_4 -alkyl)amino, C_1 - C_4 -alkylcarbonyl,

C_1 - C_4 -alkoxycarbonyl, C_1 - C_4 -alkoxy- C_1 - C_4 -alkoxycarbonyl, di-(C_1 - C_4 -alkyl)amino- C_1 -

C_4 -alkoxycarbonyl,

hydroxycarbonyl, C_1 - C_4 -alkylaminocarbonyl, di-(C_1 - C_4 -alkyl)aminocarbonyl,

aminocarbonyl, C_1 - C_4 -alkylcarbonyloxy or C_3 - C_6 -cycloalkyl;

phenyl, heterocyclyl, phenyl-C₁-C₆-alkyl, heterocyclyl-C₁-C₆-alkyl, phenoxy, heterocyclyloxy, where the phenyl and the heterocyclyl radical of the last-mentioned substituents may be partially or fully halogenated and/or may carry one to three of the following radicals:

nitro, cyano, C₁-C₄-alkyl, C₁-C₄-haloalkyl, C₁-C₄-alkoxy or C₁-C₄-haloalkoxy;

R¹⁰ is C₁-C₆-alkyl, C₃-C₆-alkenyl, C₃-C₆-haloalkenyl, C₃-C₆-alkynyl, C₃-C₆-haloalkynyl, C₃-C₆-cycloalkyl, hydroxyl, C₁-C₆-alkoxy, C₃-C₆-alkenyloxy, C₃-C₆-alkynyloxy, amino, C₁-C₆-alkylamino, di-(C₁-C₆-alkyl)amino or C₁-C₆-alkylcarbonylamino, where the abovementioned alkyl, cycloalkyl and alkoxy radicals may be partially or fully halogenated and/or may carry one to three radicals from the following group: cyano, C₁-C₄-alkoxy, C₁-C₄-alkylthio, di-(C₁-C₄-alkyl)amino, C₁-C₄-alkylcarbonyl, C₁-C₄-alkoxycarbonyl, C₁-C₄-alkoxy-C₁-C₄-alkoxycarbonyl, di-(C₁-C₄-alkyl)amino-C₁-C₄-alkoxycarbonyl, hydroxycarbonyl, C₁-C₄-alkylaminocarbonyl, di-(C₁-C₄-alkyl)aminocarbonyl, aminocarbonyl, C₁-C₄-alkylcarbonyloxy or C₃-C₆-cycloalkyl; phenyl, heterocyclyl, phenyl-C₁-C₆-alkyl or heterocyclyl-C₁-C₆-alkyl, where the phenyl or heterocyclyl radical of the four last-mentioned substituents may be partially or fully halogenated and/or may carry one to three of the following radicals:

nitro, cyano, C₁-C₄-alkyl, C₁-C₄-haloalkyl, C₁-C₄-alkoxy or C₁-C₄-haloalkoxy;

R¹¹,R¹² are C₁-C₆-alkyl, C₃-C₆-alkenyl, C₃-C₆-alkynyl or C₁-C₆-alkylcarbonyl;

l is 0 to 6;

m is 2 to 4;

n is 1 to 5;

p is 2 to 5;

and their agriculturally useful salts.

2. A cyclohexenonequinolinoyl derivative of the formula I as claimed in claim 1 where

R¹ is halogen, C₁-C₆-alkyl, C₁-C₆-haloalkyl, C₁-C₆-alkoxy, C₁-C₆-alkylthio, heterocyclyloxy or phenylthio, where the two last-mentioned radicals may be partially or fully halogenated and/or may carry one to three of the substituents mentioned below:

nitro, cyano, C₁-C₄-alkyl, C₁-C₄-haloalkyl, C₁-C₄-alkoxy or C₁-C₄-haloalkoxy;

R⁵ is halogen, OR⁷, SR⁷, SOR⁸, SO₂R⁸, OSO₂R⁸, OPR⁸R⁹, OPOR⁸R⁹, OPSR⁸R⁹, NR¹⁰R¹¹ or N-

bonded heterocycll which may be partially or fully halogenated and/or may carry one to three of the following radicals:

nitro, cyano, C₁-C₄-alkyl, C₁-C₄-haloalkyl, C₁-C₄-alkoxy or C₁-C₄-haloalkoxy.

3. A cyclohexenonequinolinoyl derivative of the formula I as claimed in claim 1, where R⁵ is halogen, OR⁷, NR¹⁰R¹¹ or N-bonded heterocycll which may be partially or fully halogenated and/or may carry one to three of the following radicals:

nitro, cyano, C₁-C₄-alkyl, C₁-C₄-haloalkyl, C₁-C₄-alkoxy or C₁-C₄-haloalkoxy.

4. A cyclohexenonequinolinoyl derivative of the formula I as claimed in claim 1, where

R⁷ is C₁-C₆-alkyl, C₁-C₂₀-alkylcarbonyl,

C₁-C₆-alkoxycarbonyl, (C₁-C₂₀-alkylthio)carbonyl, N,N-di-(C₁-C₆-alkyl)aminocarbonyl, phenyl, phenylcarbonyl or phenoxy-C₁-C₆-alkylcarbonyl, where the phenyl radical of the three last-mentioned substituents may be partially or fully halogenated and/or may carry one to three of the following radicals:

nitro, cyano, C₁-C₄-alkyl, C₁-C₄-haloalkyl, C₁-C₄-alkoxy or C₁-C₄-haloalkoxy;

R¹⁰ is C₁-C₆-alkyl or C₁-C₆-alkoxy;

R¹¹ is C₁-C₆-alkyl.

5. A cyclohexenonequinolinoyl derivative of the formula I as claimed in claim 1, where

R⁶ is nitro, halogen, cyano, C₁-C₆-alkyl, C₁-C₆-haloalkyl, di-(C₁-C₆-alkoxy)methyl, di-(C₁-C₆-alkylthio)methyl, (C₁-C₆-alkoxy)(C₁-C₆-alkylthio)-methyl, hydroxyl, C₁-C₆-alkoxy, C₁-C₆-haloalkoxy, C₁-C₆-alkoxycarbonyloxy, C₁-C₆-alkylthio, C₁-C₆-haloalkylthio, C₁-C₆-alkylsulfinyl, C₁-C₆-haloalkylsulfinyl, C₁-C₆-alkylsulfonyl, C₁-C₆-haloalkylsulfonyl, C₁-C₆-alkylcarbonyl, C₁-C₆-haloalkylcarbonyl, C₁-C₆-alkoxycarbonyl or C₁-C₆-haloalkoxycarbonyl;

or

two radicals R⁶, which are linked to the same carbon, together form an -O-(CH₂)_m-O-, -O-(CH₂)_m-S-, -S-(CH₂)_m-S-, -O-(CH₂)_n- or -S-(CH₂)_n chain which may be substituted by one to three radicals from the following group :

halogen, cyano, C₁-C₄-alkyl, C₁-C₄-haloalkyl or C₁-C₄-alkoxycarbonyl;

or

two radicals R⁶, which are linked to the same carbon, together form a -(CH₂)_p chain which may be interrupted by oxygen or sulfur and/or may be substituted by one to

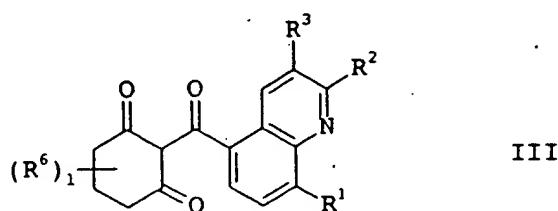
four radicals from the following group :

halogen, cyano, C₁-C₄-alkyl, C₁-C₄-haloalkyl or C₁-C₄-alkoxycarbonyl ;

or

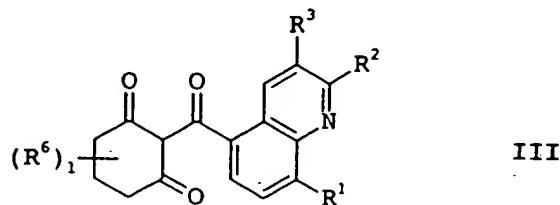
two radicals R⁶, which are linked to the same carbon, together with this carbon form a carbonyl group.

6. A process for preparing compounds of the formula I as claimed in claim 1 where R⁵ = halogen, which comprises reacting a cyclohexanedione derivative of the formula III,



where the variables R¹ to R³, R⁶ and 1 are each as defined in claim 1, with a halogenating agent.

7. A process for preparing compounds of the formula I as claimed in claim 1 where R⁵ = OR⁷, OSO₂R⁸, OPR⁸R⁹, OPOR⁸R⁹ or OPSR⁸R⁹, which comprises reacting a cyclohexanedione derivative of the formula III,

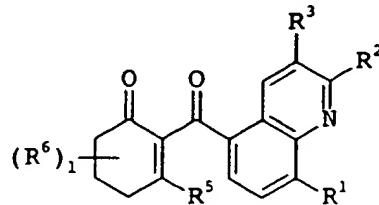


where the variables R¹ to R³, R⁶ and 1 are each as defined in claim 1, with a compound of the formula IV α , IV β , IV γ , IV δ or IV ε ,

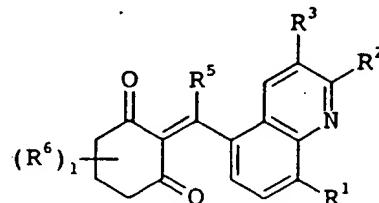
L ¹ -R ⁷	L ¹ -SO ₂ R ⁸	L ¹ -PR ⁸ R ⁹	L ¹ -POR ⁸ R ⁹	L ¹ -PSR ⁸ R ⁹
(IV α)	(IV β)	(IV γ)	(IV δ)	(IV ε)

where the variables R⁷ to R⁹ are each as defined in claim 1 and L¹ is a nucleophilically replaceable leaving group.

8. A process for preparing compounds of the formula I as claimed in claim 1 where R⁵ = OR⁷, SR⁷, POR⁸R⁹, NR¹⁰R¹¹, ONR¹¹R¹², N-linked heterocyclyl or O-(N-linked heterocyclyl), which comprises reacting a compound of the formula I α (≡ I where R⁵ = halogen, OSO₂R⁸),



and/or



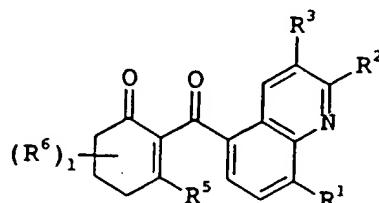
I where R⁵ = halogen or OSO₂R⁸

where the variables R¹ to R³, R⁶ and 1 are each as defined in claim 1, with a compound of the formula V α , V β , V γ , V δ , V ε , V η , V δ ,

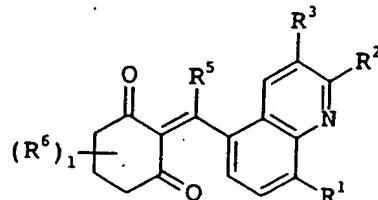
HOR ⁷	HSR ⁷	HPOR ⁸ R ⁹	HNR ¹⁰ R ¹¹	HONR ¹¹ R ¹²
(V α)	(V β)	(V γ)	(V δ)	(V ε)
H(N-linked heterocyclyl)				H(ON-linked heterocyclyl)
V η				V δ

where the variables R⁷ to R¹² are each as defined in claim 1, if appropriate in the presence of a base.

9. A process for preparing compounds of the formula I as claimed in claim 1, where R⁵ = SOR⁸, SO₂R⁸, which comprises reacting a compound of the formula I β (≡ I where R⁵ = SR⁸),



and/or



I where R⁵ = SR⁸

where the variables R¹ to R⁸ and 1 are each as defined in claim 1, with an oxidizing agent.

10. A composition, comprising a herbicidally effective amount of at least one cyclohexenone-quinolinoyl derivative of the formula I or an agriculturally useful salt of formula I as claimed in claim 1 and auxiliaries which are customarily used for formulating crop protection agents.

11. A process for preparing compositions as claimed in claim 10, which comprises mixing a herbicidally effective amount of at least one cyclohexenone-quinolinoyl derivative of the formula I or an agriculturally useful salt of formula I and auxiliaries which are customarily used for formulating crop protection agents.

12. A method for controlling undesirable vegetation, which comprises allowing a herbicidally effective amount of at least one cyclohexenone-quinolinoyl derivative of the formula I or an agriculturally useful salt of formula I as claimed in claim 1 to act on plants, their habitat and/or on seeds.

13. The use of cyclohexenone-quinolinoyl derivatives of the formula I or their agriculturally useful salts as claimed in claim 1 as herbicides.

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